

Arcstream™ Single Ended

Metal Halide lamps
70W and 150W

DATA SHEET



Product information

Arcstream™ Single Ended lamp consists of a compact high pressure metal halide discharge operating in a quartz bulb. An outer quartz envelope provides thermal and physical protection. The lamp has a ceramic bi-pin cap.

Features

- Small powerful point source enables accurate optical control in compact fittings
- Excellent operating efficiency
- Long life
- High colour rendering index
- Choice of wattages and colour temperatures
- Single easy to use G12 bi-pin cap
- Good initial and through life colour stability
- Universal burning

Applications



Retail



Industrial



Showbiz



Architectural



Hospitality

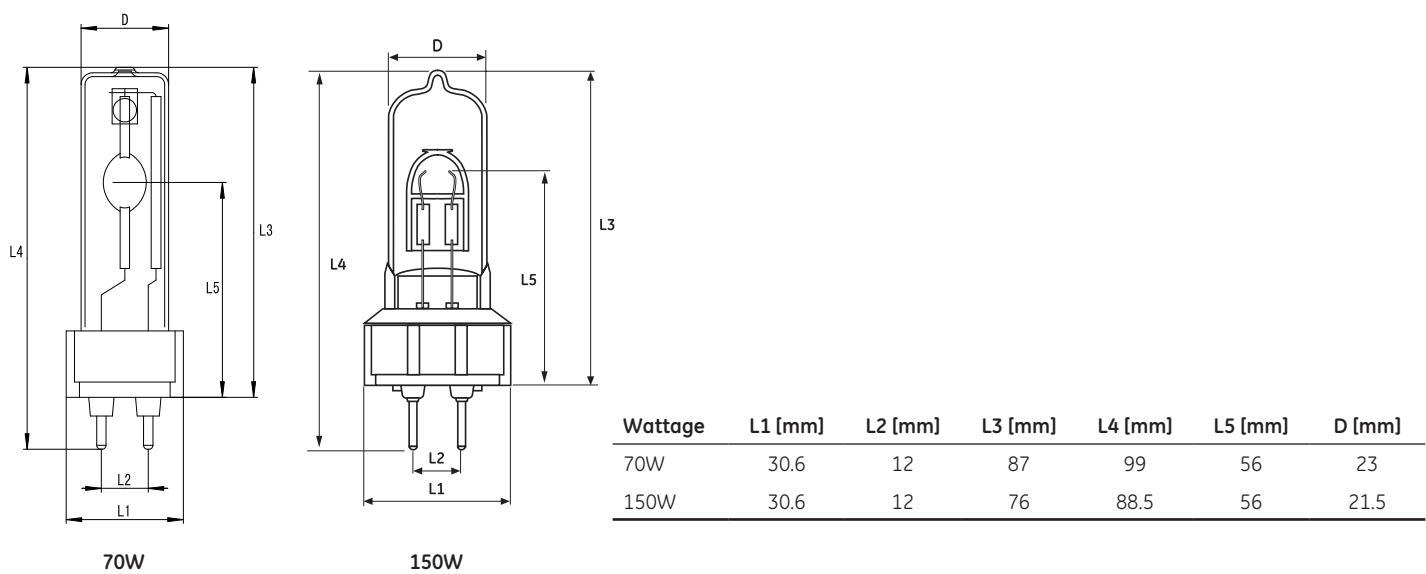
Basic data

	Single Ended UVC		Single Ended RG-2	
Product Code	97286	97287	88654	88655
Product Description	ARC70/T/U/730/G12	ARC70/T/U/742/G12	ARC150/G12/830	ARC150/G12/842
Wattage [W]	70	70	150	150
Voltage [V]	95	95	95	95
Cap	G12	G12	G12	G12
Nominal Lumen [lm]	5200	5200	12000	11500
CCT [K]	3000	4200	3000	4200
CRI [Ra]	70	75	80	80
Operating Position	Universal	Universal	Universal	Universal
Average Life [h]	6,000	6,000	6,000	6,000
Pack Quantity	10	10	10	10



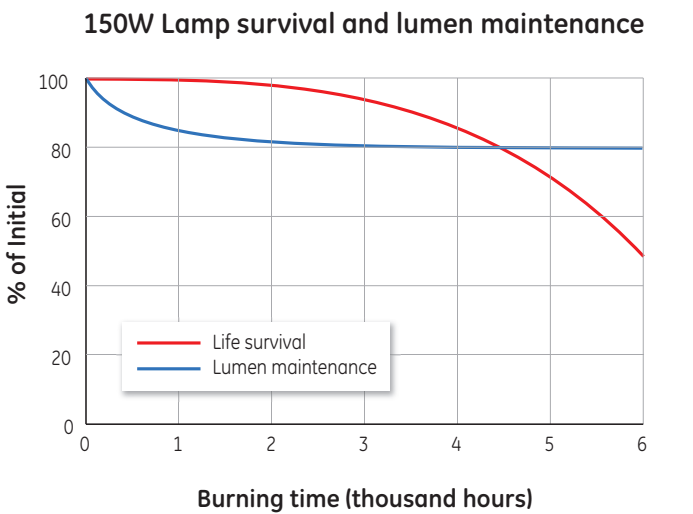
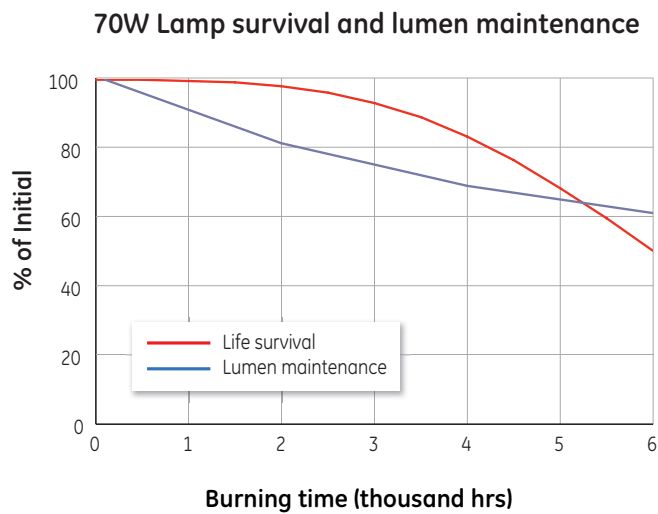
GE imagination at work

Dimensions



Survival rate and lumen maintenance

Average lamp life: 6000 hours to 50% failures. Lumen maintenance: 60% (for 70W types) or 80% (for 150W types) at 6000 hours. The graph shows the survival of representative groups of lamps operated under control conditions at 5 hrs/ start. Lamp life in service will be affected by a number of parameters, such as main voltage deviations, switching cycle, luminaire design and control gear. The information given is intended to be a practical guide in determining lamp replacement schedules.



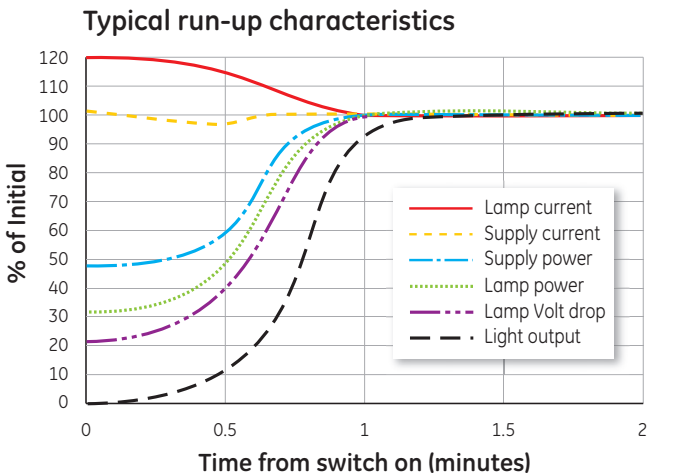
Run-up characteristics

The graph shows a typical run-up characteristic. Times for the light output to reach 90% of the final value are:

- 70W – 80 seconds
- 150W – 60 seconds

Hot restrike time

1 to 2 minutes for both lamp ratings, depending on the actual pulse voltage at the lamp.



Photometric data

Nominal Rating		70W		150W	
Nominal Colour Temperature					
Correlated Colour Temperature [K]		3,000	4,200	3,000	4,000
Nominal Light Output					
Lumen Output (at 100 hours)		5,200	5,200	12,000	11,500
Nominal Colour Appearance					
Chromacity Coordinates	x	0.437	0.372	0.437	0.380
	y	0.404	0.372	0.404	0.370
Colour Rendering					
General Colour Rendering Index [Ra]		70	75	80	85
DIN 5035 Classification		2A	2A	1B	1B

Electrical data

Based on nominal 3000K or 4000K lamp and control gear.
Supply power is based on a typical commercially available ballast.

Rating	70W			150W		
Supply Voltage [V]	220	230	240	220	230	240
Lamp Voltage [V]	85	85	85	95	95	95
Lamp Current [A]	1.0	1.0	1.0	1.82	1.82	1.82
Lamp Power [W]	75	75	75	146	146	146
Supply Current [A]	0.46*	0.43*	0.41	0.85	0.81	0.76
Supply Power [W]	87	87	88	168	169	170
Power Factor (Lagging)	0.87*	0.88*	0.89	0.90	0.91	0.93
% 3rd Harmonic	20	19	19	13	13	13
Max Line Current						
During Run-up [A]	0.55	0.51	0.47	0.92	0.84	0.76
Failed/Hot Lamp [A]	0.69	0.72	0.75	1.40	1.45	1.50
Power Factor						
Correction Capacitor [μF]	10*	10*	10	20	20	20

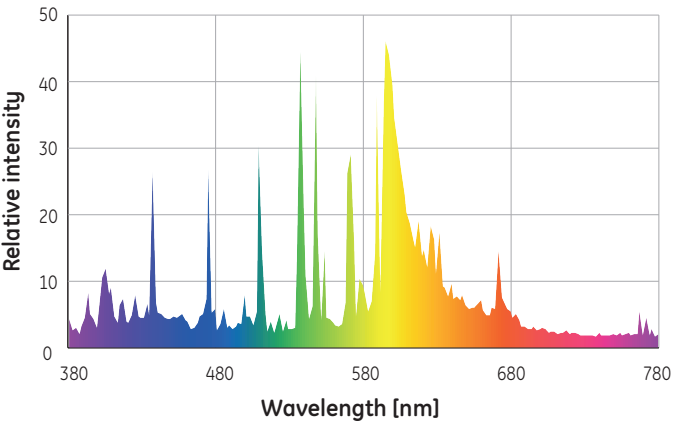
*Use a 12μF Capacitor if a power factor >0.9 (lag) is required. Supply current is then reduced at 220V to 0.42A (0.94pF) and at 230V to 0.40A (0.94pF).

NOTE: Arcstream lamps do not retain the claimed performance if they are dimmed. All the performance data quoted have been measured with the lamp in the base down position and at rated supply volts.

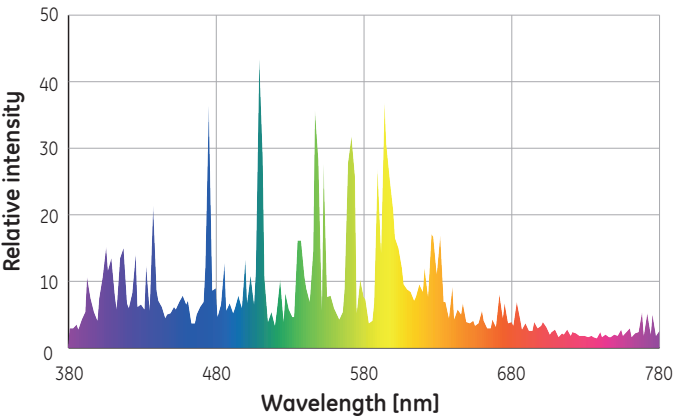
Supply voltage

Lamps will start and operate with a 10% reduction in rated supply voltage when the correct control gear is used. However, in order to maximise lamp survival, lumen maintenance and colour uniformity, the supply voltage and ballast design should be within $\pm 3\%$. Supply variations of $\pm 5\%$ are permissible for short periods only. Lamps are suitable for supplies in the range 220V-250V 50/60Hz for appropriately rated series choke (reactor) ballasts. Supplies outside this range require a transformer (conventional, high reactance or CWA) to ensure correct lamp operation.

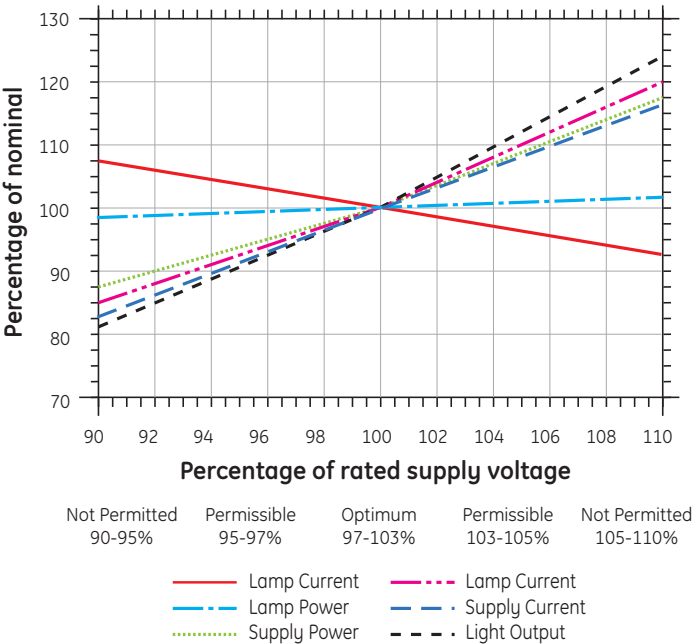
3000K spectral power distribution



4000K spectral power distribution



Effect of supply voltage variation on performance



Fusing of choke/ignitor circuits

For a very short period after switch-on, all discharge lamps may act as a partial rectifier and as a result the ballast may allow several times the normal supply current to flow. To avoid nuisance fuse failure the ratings shown below should be used. For further information refer to the publication "Fuse Ratings For Discharge Lamps" available from GE Lighting. HBC or MCB (type 3 or 4) fuse ratings for single and multiple lamp installations:

Number of Lamps	1	2	3	4	5	6
70W Fuse Rating [A]	4	4	4	6	6	10
150W Fuse Rating [A]	4	6	10	10	16	16

Warning

Arcstream™ (150W) lamps have an outer bulb made of quartz which transmits UVA and UVB radiation. All metal halide lamps, including Arcstream™, operate at very high internal pressures, consequently it is a possibility that in a large installation a few lamps may shatter if run beyond the rated life. To reduce the risk of this happening, continuous operation of the lamps should be avoided and lamps should be turned off at least once for 15 minutes per week.

Arcstream™ lamps are only suitable for operation in fully enclosed luminaires where lens/diffuser material must be able to contain fragments of hot quartz or glass (up to 1100 °C). Additionally, 150W Arcstream™ lamps must only be operated in a fully enclosed luminaire with a UV absorbent front cover glass.

Installation, operation and disposal

Important – The following information gives essential precautions for the safe handling, installation, use and disposal of Metal Halide lamps. Failure to adhere to these precautions could expose the user to harmful UVA and UVB radiation.

Installation

- All lamps should be installed and replaced by an electrician or suitably qualified person who must first isolate the equipment from the electricity supply.
- Ensure that the replacement lamp is the correct type for the application and is located correctly and firmly in the lamp holder.
- If the outer bulb is broken or scratched the lamp must not be used.
- Fingerprints on the outer bulb should be removed using a soft cloth with a small quantity of alcohol based cleaner.

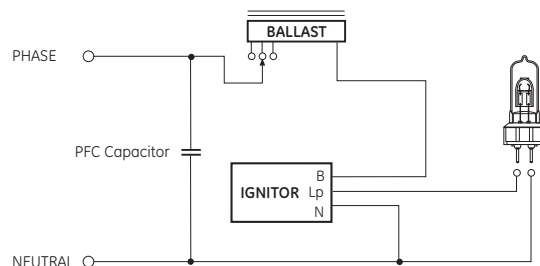
Operation

- During operation parts of the lamp surface may reach temperatures up to 600°C. Liquid condensation droplets or water splashing onto the lamp must be prevented as this may cause the bulb to shatter.
- Arcstream™ lamps are only suitable for operation in fully enclosed luminaires where lens/diffuser material must be able to contain fragments of hot quartz or glass (up to 1100 °C). Additionally, 150W Arcstream™ lamps must only be operated in a fully enclosed luminaire with a UV absorbent front cover glass.
- Do not use beyond rated life.
- Use on ballasts or systems that are either resistant to or will shut off in event of rectification.

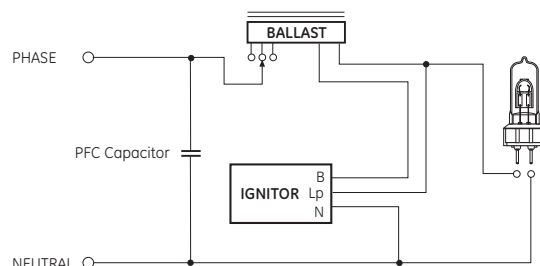
Disposal

- Allow a failed lamp to cool and isolate the supply before removal from the luminaire.
- Small quantities of lamps may be disposed of with ordinary refuse. The lamps should be placed in original or similar packaging before disposal.
- Large quantities of lamps must be disposed of in accordance with the rules of the local authority.

Typical superimposed ignitor circuit



Typical impulser ignitor circuit



Guidance for luminaire manufacturers

Lamp operating temperature limits

	70W	150W
Max Pin Temperature Limit [°C]	150	150
Max Cap/Bulb Interface Temperature [°C]	250	270
Max Bulb Temperature [°C]	500	550

Reflector design

Due to the nature of the arc some separation of colour within the beam produced by a fitting may be experienced. This effect can be minimised by careful reflector design. In general an evenly mixed beam can be achieved by using a parabolic reflector. Any spreading of the beam should be achieved by using a degree of faceting and surface texturing. Narrow angle reflectors should also incorporate a small degree of faceting or surface texturing. Further information and advice can be obtained on the application.

Control gear

For correct starting and operation it is important that the lamp and control gear are compatible and suitable for the supply voltage at the luminaire.

Ballasts

The following 70W and 150W ballasts are suitable:

- (a) Ballasts manufactured for lamps complying with the forthcoming IEC metal halide lamp specification.
- (b) Ballasts manufactured for lamps complying with the high pressure sodium lamp specification IEC60662. Ballasts should comply with specifications IEC61347-1 and IEC60923.

Ballast thermal protection

Use on ballasts or systems that are either resistant to or will shut off in event of rectification.

Voltage adjustment

Additional tapings at $\pm 10V$ should be provided on series choke ballasts to ensure actual supply voltage and rated voltage of the ballast are within the GE recommended limits. Ballasts rated for 220/230/240V should be used for Europe and Ireland excluding UK mainland. Ballasts with no means of voltage adjustment may be used provided that the supply voltage is maintained within the recommended limits.

Ignitors

Correct ignitor performance is essential for successful starting of the lamp. Superimposed or impulser type ignitors are suitable for use with Arcstream™ lamps, but it is recommended that only GE approved ignitors are used. Pulse requirements are $\pm 3.5kV$ peak (minimum) with pulses produced on both mains half-cycles between 60/90 degrees and 240/270 degrees. Ignitors should comply with specifications IEC61347-2 and IEC60927.

Timed ignitors

Use of a "timed" or "cutout" ignitor is not a specific requirement for Arcstream lamps, but it is a good optional safety feature for the installation. The time period must be sufficient to allow lamps to hot restart where the supply is accidentally switched off or a sudden reduction in supply voltage causes the lamp to extinguish. A minimum period of 6 minutes ignitor operation is recommended before the ignitor is automatically switched off. Commercially available 10/11 minute timed ignitors should be used.

Approved ignitors for both 70W and 150W ratings

Thorn	G53459, G53476
BAG Turgi	MZN 150S, MZN 250SE, MZN 400SU
Tridonic/Zumtobel	ZRM GES, ZRM 1.8ES/2
May&Christie	PTH070* (for 70W only), PTH150* (for 150W only), PAE400, PXE400
Sabir	AIF40

*Impulser type must be used in conjunction with appropriate Parry ballast – HDZ073 (70W), HSV162 (150W) or HSV163 (150W). You are advised to contact GE Lighting if you wish to use any ignitor not on the above list.

Lamp to ignitor cable capacitance

To achieve good starting with superimposed types, ignitors must be adjacent to the luminaire. Cable capacitance between wiring from the ignitor "Lp" terminal to lamp and adjacent metal and/or other cables should not exceed 100pF (<1 metre length) unless otherwise stated by the ignitor manufacturer. When using impulser type ignitors longer cable lengths between ballast and lamp are permissible. For example Parry impulser types can be used with between 2000pF (13 metres) and 2800pF (19 metres) of typical cable depending upon lamp rating and supply voltage.

PFC capacitors for simple choke circuits

Power factor correction is advisable in order to minimise supply current and electricity costs. For supply voltages in the range 200-250V a 250V rated capacitor with a $\pm 10\%$ tolerance is recommended.

Rating	70W	150W
Capacitor	10 μ F	20 μ F

Suitable lamp holders – G12

Any G12 lamp holder complying with the relevant IEC spec. is suitable, e.g.:

Bender&Wirth	960
Thorn	GL1235
BJB	G12-25.809